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**Parker et al.**

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(54) **SYSTEM AND METHOD EMPLOYING LED  
 LIGHT SOURCES FOR A PROJECTION  
 DISPLAY**

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(57) **ABSTRACT**

(\*) **Notice:** Subject to any disclaimer, the term of this  
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In a single path embodiment of a multimedia projector (30) of the present invention, the light emitted from blue, green, and red generally monochromatic LEDs (72) or LED arrays (70) is propagated through optical fibers (76) and then integrated through an optical integrator (40). A display controller (56) receives image data from a personal computer (58) and converts the data to color frame sequential data delivered to a common display device (44). The display controller (56) synchronizes the data with ON/OFF signals conveyed to an LED power supply (34). Because the synchronization is entirely electronic, the frame sequential information can be cycled much faster and more accurately than can be accomplished with a color wheel system (10). In a multiple path embodiment of a multimedia projector (120) of the present invention, the light emitted from blue, green, and red generally monochromatic LEDs (72) or LED arrays (70) is propagated along separate respective optical paths (36b, 36g, 36r) through optical fibers (76) and then integrated through an optical integrator (40). A display controller (56) receives image data from a personal computer (58) and converts the data to color frame sequential data delivered to respective separate display devices (44b, 44g, 44r) whose output is coupled into a combiner (122). The display controller (56) synchronizes the data between the separate display devices (44b, 44g, 44r) to form a composite image. In this embodiment, all three sets of LEDs (72) can be left ON continuously. Other LED array color combinations can be employed with or without an additional white light path.

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**24 Claims, 5 Drawing Sheets**